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" Salvation of India lies in Cottages."

—*MAHATMA GANDHI*

RURAL INDA COMPLETES NINETEEN YEARS

THE present issue completes Nineteen years of publication of "RURAL INDIA" in the pioneering service of Rural Reconstruction in this country.

During these years and particularly after the attainment of Freedom the organisational frame work of rural development programme has immensely expanded with the launching of the two Five-Year Plans and starting of the Community Projects and the National Extension Blocks. But tangible results in the sphere of social and economic reconstruction of rural areas expected to be achieved as a result of the launching of these schemes have been rather poor if not disappointing.

Judged by the test of awakening among the rural masses the spirit of self-reliance and self-improvement, which should obviously determine success or otherwise of these schemes, the results, as revealed by the successive reports of the Programme Evaluation Committee, make dismal reading.' The very approach to the programme appears to be haphazard, half-hearted and lacking both in method and spirit. It is no wonder, the programme has failed to inspire spontaneous public co-operation and drags on its insipid existence as one of the many wasteful and stagnating departmental activities of the Government.

Lately, its ineffective and wasteful working has provoked bitter criticism both in the Lok Sabha and outside. 'Kurukshetra', the official organ of the Ministry of Community Projects, in its last few issues, is full of criticism hurled at the programme by the Congress as well as non-Congress legislators in the Lok Sabha and unfavourable press comments appeared in the country's responsible papers. The necessity to re-orientate the Community Development Progamme with a view to make its working effective and fruitful is being stressed by all sections of the people. However, it appears most unlikely that the present administration will succeed to shake off its complacency to which it is inextricably tied up all these years and to bring about effective re-orientation in the development programme that it needs.

That it is now being wedded to the 'Bhoodan and Gramdan' movement of Shri Vinoba hardly makes its chances for success any the better. If the administration has failed to bring about co-ordination between technical and executive departments in the working of the Community Projects and the National Extension Blocks all these five years and more and if as officially stated by the Minister for Community Projects in the Lok Sabha it could not secure the

co-operation of the peoples' representatives in the legislatures, it seems practically impossible to bring about effective co-ordination and harmonious working between two such diametrically opposite human elements as represented by the bureaucratised administration of the Community Projects and the 'Sevakas' of 'Bhoodan and Gramdan' movement. It is almost a psychological impossibility that the two elements so different in their way of life, outlook and approach will ever make for harmonious working in any scheme.

The obvious risk is that by their close association with the bureaucratic staff of the Community Projects and the Block administrations, the 'Pad Yatrees' of Bhoodan army will soon degenerate into "Jeep Yatrees" and all that it implies. Many of them may be lured by the office and money to get into paid jobs of these projects or get demoralised in other ways while working with these project officials. While it is doubtful that this co-ordination between Community Projects and 'Sarvodaya' movement will be conducive to better and satisfactory working of these projects, it is just common-sense, that this association will in effect demoralise the workers of "Bhoodan" movement affecting the progress of the movement in the country.

We presume, that the Minister for Community Projects, Shri S. K. Dey, seems to be alive to this inherent danger of co-ordinating the Community Project scheme with the 'Gramdan' movement, when lately, he is reported to have stated in the course of a press Conference in Bangalore :—

"He did not expect a path strewn with roses. Just as the Government measures could be defeated by determined capitalistic-cum-communal-cum-feudalistic cliques, Acharya Vinoba Bhave's pocket may be picked by the same cliques".

It appears, restraints of his position did not allow him to add the most formidable of these cliques i. e. bureaucratic clique, which is known to defeat most of the well-intentioned schemes of the Government.

Progress of the Community Projects

The very fact that the Community Projects and the Development Blocks are being contemplated to be co-ordinated with the 'Gramdan' movement is proof positive of loss of faith in their own potency and method of working to produce satisfactory results. That these Projects are revolutionising the countryside, so often claimed by our Prime Minister, has only proved to be a myth and an illusion. They are the objects of criticism from all sections of people and veritable pools of inefficiency and wastage of public money seem to be only too true.

In the course of the same statement, quoted as above, when questioned about the progress of the Community Projects Shri S. K. Dey is reported to have stated :—

"Some measure of success had been achieved, although a lot remains to be done."

This statement of the Minister for Community Projects itself betrays apologetic existence of these projects which in other words is an admission of failure of the scheme, though the administration in its complacency would be unwilling to accept it as such.

Over-all Picture

It is not only the working of the Community Projects and the National Blocks which presents such a dismal picture after five years of their working but the picture of the country as a whole is no less depressing after ten years of Independence. Despite Government propaganda which is directed to present imaginary picture of a "Welfare State", actual conditions show unmistakable signs of downward trend in every aspect

of national life. Shri Y. G. Paranjpe in a contributed article in the "Times of India" sums up this picture, which reads :—

"One feels angry with the self-complacent picture of India as we find it in Government propaganda. This is what India is today after ten years of Swaraj and inspite of Basic Education, Controls, Prohibition, Co-operation drives and Five-Year Plans : illiterate, uncultured unneighbourly masses, apathetic to all schemes of reform; unskilled and dishonest labour; profiteering traders; teachers devoid of idealism; and corrupt and insolent public servants."

The picture appears to be incomplete without a mention of self-complacent, power hungry, selfish and inefficient class of politicians who have been ruling the destiny of the country for the last ten years and who believe talking in a big way and acting just the opposite way to gain their political ends. It is no wonder that their confused and unstatesmen like actions are leading the country to Moral, Economic and Administrative bank-ruptcy which appears to be round the corner.

Food the Core of the Second Plan

The cumulative effect of all administrative inefficiencies and wastages of the last ten years have already landed the country into economic crisis resulting in the depletion of the country's foreign exchange reserves and necessitating the pruning of the Second Five-Year Plan to save its core. Food, which constitutes the core of the Plan, has once again claimed first priority in national planning and the targets of food production had been raised from 75 million tons to 80.5 million tons at the end of the Second Plan.

Taking the production of food for the last year 1956-57 at 68.5 million tons the increased targets to be achieved by the end of the Second Plan, i. e. 80.5 million tons, constitute 25% increase in the course of the remaining three years of the plan. Again the food targets suffer from over optimism which is not warranted by the experience of the past when the production has practically remained stationary during the last three years.

However, it remains to be seen how the present slack and inefficient development machinery, which has failed to tackle the problem satisfactorily in the last ten years would be geared and enlarged in years to come to achieve this seemingly impossible target of increasing 25% production of food by the end of March 1961 which is the end of the Second Plan period. And in the words of the Union Agriculture Minister, Shri Ajit Prasad Jain, *"unless they substantially increased the country's food production, their future was dark and the prospects of the success of the Second Five-Year Plan were dim."*

Food, therefore, is the crux of the country's food as well as economic problem and the success or failure of the Second Plan mainly rests on the achievements of the food targets. This view has been emphasised by the Prime Minister, Shri Nehru, in the course of his recent public address at Baroda, when he is reported to have been stated :—

"Immediate impediment to the plan was the food problem. There was drought in several parts of the country and floods in some areas. Reports from Bihar, Uttar Pradesh and some other States speak of severe droughts which might adversely effect the food production programme of the country. If food targets were not fulfilled the plan would not succeed."

Gathering Economic Crisis

The failure of the Krishnamachary mission to U. S. A. and other foreign countries to obtain foreign loans to finance the Second Plan and to fill-up the gap of the foreign exchange reserve has made it imperative for the administration not only to effect drastic cuts in the plan but also to severely cut down

expenditure on administration consistent with efficiency. The tendency to procrastinate and to wait for something to turn up which has been mostly in evidence during the last ten years will further aggravate economic crisis which must be averted at all costs. It is no use blaming people or expect from them something which is beyond their capacity and resources. Those who are running the Government should set about the task of taking a realistic view of the fast deteriorating economic situation of the country and take courage to cut down expenditure and to effect economy in all possible ways.

It is amazing in this context that the Government has not yet realised the gravity of the economic situation and the tendency to mark time and to wait for something to turn up still persists at the highest level. This is rather unfortunate, as put by Shri B. G. Verghese in the "Times of India" dated 25th October.

"Amid the gathering crisis there has so far been a tendency on the part of the Government to mark time and to wait for something to turn up. Circumstances have, however, compelled a drastic pruning of imports, and rigorous enforcement of differred credit terms for the import of capital goods in the private and even the public sector.

" Meanwhile the "Something" that everybody has been waiting for has not turned up. Even if all the required foreign exchange were to materialise, there would still be the problem of finding the internal resources to match it. Costs and prices have gone up. The need for cutting down deficit financing has been stated in the light of inflationary pressures. The small savings and borrowing programmes are trailing behind the targets set for them.

"These are all matters to which urgent attention needs to be given. The Government will have to act with realism and courage instead of procrastinating and trying to shower false comfort on the people with pious promises of good days to follow once the mythical "hump" year of 1958-59 is crossed. The Prime Minister once remarked that the present generation of Indians was doomed to hard labour. This is a phrase that the Government might more usefully recall.'

They say, 'crisis reveals a man'. Those who are responsible to run the Government as also the people are on their trial. The next few years of "crisis" will test their capacity and stamina to the utmost and will show how they acquit themselves.

RESUSCITATING SMALL INDUSTRY

By: **S. KRISHNA**

FINANCE is the life blood of the industry. The productive activity of an industry irrespective of its size can be sustained on its upward trend only by means of an elastic source of finance. It is too well known to dwell any further on this point that the existing financial institutions in India have gone only a part of the way in meeting the pressing requirements of industrial finance. Leaving apart foreign investments and carporate savings, the industries in India have mostly depended upon managing agents, the investing public, commercial banks, Central and State Governments and a few other specialised institutions for their financial needs. Strange as it may sound, but the fact remains that the commercial banks in India have satisfied the major part of the needs of big industries to a considerable extent leaving the medium and small scale industries unclothed and under-nourished.

Before examining the financial requirements of small scale industries in India and the possible sources of finance, it is necessary to assess the importance of this sector in our economy both in terms of

output turned out and employment provided. Statistics provided by the National Income Committee give us some reliable information. According to the estimate of the Committee, the value of net output of small enterprises in India in 1950-51 was Rs. 910 crores, while that of factory establishments was about Rs. 550 crores. The number of persons employed in small undertakings in 1950-51 was about 11.5 million as against 3 million in factory establishments. To make it clear it may be added, however, that small enterprise comprises occupations ancillary to agriculture carried on by members of the family as a source of off-farm employment and many other productive units located in urban or semi-urban areas and producing with small capital equipment, the goods that are complementary to or competitive with the products of the large scale industries.

In the planned economic development as envisaged under the First and Second Plans, the significance of small scale industries comes to the fore as a result of the policy for a de-centralised pattern of production. It is obvious that the objective of the planners in sowing seeds of economic development into the innermost recesses of rural India and transform the sector of traditional industry into an efficient and integral part of the consumer goods industries of the country that has highlighted the problem of the small scale industries.

The deplorable financial position of many small undertakings is to be traced in the fact that when many of them came into existence at the outbreak of second world war, they were grossly undercapitalist. Incidentally, the war carried in its wake an upper hand for the seller's market and in exploiting acute shortage of consumer's goods and spare and intermediate materials, the small producers were able to command a fairly high margin of profit.

With the close of the war, the extraordinarily wide wartime markets shrank considerably and as a consequence, the small units started staggering in the absence of fixed and working capital.

The capital requirements of small scale industries are not very much different from those of the large scale industries because the small units too are able to open equity or risk capital and borrowed capital. In many cases, however, this distinction is not clearly maintained. There are two types of borrowed capital, (i) long-term capital for the creation of capital assets and (ii) short-term capital for running expenses or what we call current expenses. Linked with the short-term requirements is yet another financial need viz. trade credit. Although small businesses are able to procure trade credit for their purchases, the money for the goods they produce is not readily realised from large scale units, government departments and marketing agencies to which the small units cater. Thus, a break is introduced in the financial cycle of small units and this is a source of considerable difficulty to them. The small units stand all the more in need of capital for purchase of raw materials, stores, payment of wages, goods in process and holding stock of finished goods so that for the satisfaction of these needs, they may not depend upon the receipts from their sales.

In respect of long-term capital, both the small and the large industries have had access to very few institutional agencies in the past. The commercial banks in India have somehow not been inclined to attend to the long-term needs of large scale industries much less to those of small units. This could not be otherwise, for, commercial banks deal

in short-term demand liabilites, they can hardly afford long-term involvements.

Before assessing the difficulties of small scale industries as regards short-term capital, the structure of such small units need to be well understood. Most of the small establishments are owned by individuals, partnership of private limited companies and the financial investment is provided by the promoters themselves. In fine, the small scale industry has so far been dependent upon the initiative and enterprise of individual entrepreneurs. It is not to be presumed, however, that the constitution of small scale industries in the form of joint stock companies would have eased their financial difficulties for even where small and medium size units are organised as joint stock companies, their shares are floated on the principal stock exchange of the country. As a direct result of the deep-seated malaise in the organisation of small units, the shares have had poor marketability. Several reasons explain why small units in our country don't seem to have chequered career or in other words have not faired well with organised credit institutions. They often offered slender security against loans. On top of this are other discouraging features such as absence of standardisation, difficulties of marketing products and slow and inefficient managerial policy at the service of such units. Because of this short coming, the bigger joint stock banks have not dared to undertake financing of small industries. These are some of the factors that prejudiced the well established commercial banks in their activities in financing small industries. It is squarely recognised that viewed against the financial requirements of small industries the existing arrangements i. e. State Aid Legislation and State Financial Corporations have done very little. In the past few years, many States have made budgetary provisions for granting assistance to small enterprises and yet it is understood that the loans that have been granted to fall far short even of these small provisions. This paradoxical situation is partly attributable to stringent procedural formalities that all State assistance is characterised by.

The State Financial Corporations have contributed very little in providing extensive financial assistance to small business. These institutions have wide methods open to them to raise funds and are eminently suited to procure long-term finance to small and medium-scale industries. Under the terms of the State Financial Corporations Act, these bodies are authorised to grant loans to and subscribe to debentures of industrial concerns of sufficient security. Further, they may guarantee loans floated in the public market and they may underwrite issue of shares, stocks and debentures for a period not exceeding 20 years. The major criticism against these Corporations has been that the conditions and procedural formalities adopted by them for grant of loans are too rigid and cumbersome for the not so well informed small entrepreneur.

It will however be fair to mention some of the difficulties that the Corporations have to encounter. It has been found that the closer of small industries far outnumber those that come into being, particularly at a time when economic conditions are unfavourable. Many concerns do not maintain their accounts properly and sometime they do not even care to have them audited properly. Some small undertakings do not make provision for audit.

Notwithstanding these difficulties, the State Financial Corporations have an important role to play in the future development of small businesses in our

country. The Karve Committee has emphasised the role of State Corporations as feeders of credit to cottage and small scale industries by suggesting that each corporation should have a cottage industries section.

A proposition which seems very practicable in solving this 'financial scarcity' is a complete scientific reorganisation of the small entrepreneurs' instinctive preference for procuring finance from the unorganised sector of private money lenders. This means elimination of the non-banking activities of the indigenous sector from its pure banking activities and also the effective linking of this sphere with the central banking institution. This may not be capable of an overnight achievement but definitely direct us to the emergence of specialised institutions that would cater to the financial requirments of small-scale and village industries, in laying a strong credit foundation for small units. It was proper that the First Plan made a promising advance in the manner desired over the position before the Plan in making substantial financial provision for the development of village and small-scale industries.

The establishment of the All-India Handloom Board, the All-India Handicrafts Board, the Khadi and Village Industries Commission, the Small-Scale Industries Board, the Central Silk Board and the Coir-Board–are points in proof of Government's earnest desire to foster the development of such industries.

Besides suffering from lack of finance these small units also groan under organisational weaknesses with regard to the marketing of goods and purchase of raw materials. Absence of standardisation and limited markets further weaken their position inasmuch as commercial banks hesitate to accept their goods as security for advances.

The important role assigned to small-scale industries in the Second Plan is, therefore, far too big for achievement under a haphazard system of finance to such industries. Why not learn a few lessons from Japan?

We can think of no better model other than Japan with regard to small scale industrialisation. Japanese commercial banks adequately finance these small units. There are four different types of special banking institutions that supply loans to these units for varying periods against different types of security. The rate of interest charged is rather high but credit is regularly made available. Besides, there are 'credit guarantee associations' which guarantee the repayment of loans issued to these units by the commercial banks. These associations charge the borrowers an insurance premium of 2 percent. Besides, the Government under the "Small Enterprise Credit Insurance Law" undertake to insure 80% of the loans given to small units by the commercial banks. The Credit Guarnteeing Associations can reinsure 60% of these loans with the Government. When standards for small units in our country are prescribed and demand to a certain extent is stabilised, the Japanese guaranteeing system must be adopted as recommended by the Karve Committee with necessary modifications.

It is only when the economic and sociological premises of small-scale industrialisation in our country are recognised that finance on the aforesaid manner can be readily and regularly made available to the small man in industry. This calls for unstinted State assistance on the one hand and a genuine spirit of co-operation on the other by the millions of traditional craftsmen and small enterprises scattered all over the country.

DILEMMAS OF DEMOCRATIC PLANNING IN INDIA

By : **Prof. C. L. KHANNA**

PLANNING, whether totalitarian or democratic in pattern, always bristles with difficulties and dangers. About 5 years ago, to be more exact, on the 10th December, 1952, the First Parliament of the Indian Republic gave its blessing for the embarkation of the First Democratic Plan (1951–56) and on the 13th September, 1956, the same supreme body reaffirmed its resolve for the continuance of the process of planning in its second phase—the Second Five-Year Plan (1956-61)—with the fundamental difference that the new Plan was to conform to the egalitarian mode of society as envisaged in the Socialist Pattern of Society.

Since the inception of the Planning Era India has become the cynosure of the world, which is keenly watching whether democratic or totalitarian methods can do more to modernise and industrialize. Some have played the role of prophets in observing that "if India's (Second) Five-Year Plan fails, Indians will be sorely tempted to take the harsh totalitarian road". Never have Indian leaders taken cognizance of the thorny path of democratic pl nning so much as during the last eighteen months of the birth of the Second Plan. Adverse criticism bordering on the verge of defeatism has been hurled at it from all quarters-national as well as international. Thanks to the robust optimism of our Prime Minister Nehru and some of his co-workers that we have been marching ahead, slowly yet steadily, with grit and determination. However, it is now believed that the Second Plan has slipped into the "foreign exchange crisis" which fact has emboldened its critics to make capital out of it. It is, therefore, high time to examine the entire "web of circumstances" so that the Plan may not leave a trail of dismay and despair for the common man but may, on the contrary, enthuse him with renewed confidence and redoubled courage to fight successfully this crusade against poverty and unemployment writ large on the face of our country.

Party Politics and Democratic Planning

In common parlance, democratic planning has its roots deeply embedded in the will of the masses. It is not superimposed from above but it grows from below. It is pyramidical in structure having a broad-base at the bottom and a tapered-off end at the top. As such our First as also the Second Plan emerged from the six lakh and odd villages. But since illiteracy, which reigned supreme there, could not be wiped out within a reasonable period of time and with the limited resources, real planning had to be restrictive in character. Only a small number of villages were brought under the schemes of economic development on "selective" basis. Community Development Projects and later National Extension Service Blocks were launched to inculcate the spirit of self-help and mutual help amongst the illiterate and ignorant masses of India living in villages.

In village re-construction, as elsewhere, the various political parties—the Socialists, Communists, Jan Sanghites, Hindu Maha Sabha, and others—tried to sneak in ostensibly to impart a political colour to the economic activities sponsored by the Congress Government in the various regions. Differences of politicai ideologies queered the pitch for the planners. The politicians, opposed to the Congress, intriguingly weened the credulous villagers to their own points of view. The Congress workers were caught napping.

Self-complacent and power-intoxicated average congressman (barring a few notable exceptions) helped the non-Congress parties in their anti-national activities. Lack of emotional integration in the State, district, town and village Congress organisations weakened the Congress-hold on the general masses as is reflected through the Congress defeats in the last elections (notably Kerala). Unless the Congress regains the ground lost by it during the last six years of economic uplift by shaking-up the dormant Congressmen and unless an "economic outlook" is put on by them, the political hurdles will persist in retarding the pace and quantum of our economic progress. By doing so alone can the peoples' confidence in the Congress and its economic policies and plans be revived and kept up.

We do not mean to suggest that there are any fundamental differences in the various shades of political parties as to the general economic ends of the Plan, but what cannot be overlooked is that they are at cross roads as to the means adopted to achieve the targets. And since means to reach a given goal vary, divergence of opinion becomes a concomitant of democratic form of planning. It is not so in totalitarian planning. Notwithstanding that, it is foolish to allow such differences to precipitate to the detriment of the country. India being now on the brink of a crisis, it is the most opportune time for all political parties to sink their differences, real or imaginary, and take up the implementation of the Plan on a "War basis".

Social Hurdles

Further, democratic planning rests on the presumptuous assumption that there is enlightened self-interest and consciousness for the community of interests. Unfortunately, the Indian masses exhibit a gross absence of both. The century-and-a-half old serfdom has made us inert. Not only do we lack the spirit of initiative and enterprise, but also consciousness for the sub-human existence, under-employment or unemployment. In the urban sector and in the intelligentsia of our society there may be a visible desire for "good things", that is, for a reasonable high living standard. But on the whole economic awareness is wanting in the vast majority of villagers and townsmen. Economic democracy calls for a growing consciousness and a pulsating passion for materialistic advancement. That ruling passion is, in fact, the main incentive for all economically advanced countries, capitalistic or socialistic.

Whose responsibility is it, then, to galvanize the economically down-trodden Indians to this new sense of awakening? The entire galaxy of political leaders and particularly the Congress leaders at all levels have a vital role to play on this social front. "From political to economic awakening" should be their principal function. The craze for political power must necessarily be subordinated to the contribution towards the economic betterment of themselves and their followers and their countrymen. They must develop and forge a "sense of personal identity" with the planned economic development, believing, as they all do, that economic development constituted the essence of political freedom.

Economic Dilemmas

The biggest hurdle, however, springs on the economic side. We have formulated a financial as distinguished sometimes from physical Plan. The two are, in fact, "complementary", the object of either being "to secure the various balances in the economy at continually higher levels". The financial resources—domestic and foreign—operate as an important limiting factor. This can be

mitigated to some extent by harnessing idle man-power, which is super-abundant in our country. If this man-power is not forthcoming voluntarily and in an adequate measure on account of social and economic backwardness or different political ideologies, the economic growth will be stinted. The accent of our planning is, consequently, on the mobilisation of finances. The main sources of finances are :—

1. Taxes;
2 Public savings;
3. Private savings;
3. Internal borrowing;
4. "Created Money" or deficit financing;
9. Foreign aid in the form of loans, grants or investments.

Finances for "Sectoral" Development.

1. Borrowings :—For economic and administrative expediencies, economic development has been divided into two sectors—the private enterprise and the State sector apart from the co-operative sector which is of recent origin. Much controversy has raged round the sectoral division. The critics forget that the enlargement of the State or Public sector in terms of the New Industrial Policy of April, 1956 is in consonance with the concept of Welfare State embodied in the Constitution of India. Moreover, the expansion of the State sector is, according to economic experts (barring the World Bank Mission), bound to benefit the private sector. It is fantastic nonsense to characterise the two sectors as competitive. They are essentailly complementary. It is the bounden duty of the Government to so formulate its fiscal and financial policies as to maintain the requisite level of finances in the market for the twin-born sectors. The argument that the existence of the public sector will dry up the available finances for its counter-part in the private enterprise has been belied by the fact that the recent State loans floated by the Bombay and Madras States were over-subscribed within a span of two hours. It is true that during the last year and a half Indian Government could raise Rs. 140 crores against the planned borrowings of the order of Rs. 160 crores per year. This gap has to be bridged up in the future with due regard to the needs of the private sector. The apprehensions that public borrowing will reduce the opportunities for private borrowing are ill-founded.

2. Deficit Financing :—Another avenue for financing the Plan is "created money". With the rising spiral of prices, the prospects for undertaking deficit budgeting of the same magnitude as originally provided for in the Second Plan (viz. Rs. 1200 crores) are stated to be very bleak, according to Mr. T. T. Krishnamachari, Union Finace Minister. The limit has been reduced to Rs. 1000 crores. It is doubted whether our economy would show so much resiliency as to withstand the inflationary pressure engendered by deficit financing of the lower order. On the other hand, it is believed that any further reduction in "created money" may mean slashing down the targets of the Plan and perpetuating the poverty-line.

3. Taxation :—With regard to taxation, if taxes were reduced to meet the wishes of the "opposition", the gap between the required and available finances for the execution of the Plan would become unbridgeable. On the contrary, their enhancement designed to yield an aggregated of Rs. 100 crores will, it is alleged, hit hard the common man unwonted to the magnitude of sacrifice demanded by the Plan. The tax maxim to "pluck the goose with the least squealing" is thus by passed. The

commonman's hue and cry against the new or old enhanced taxes, which was born of short-sightedness and political ideologies, has gradually waned. The tax-payer will, with the passage of time, exhibit a self-adjusting attitude to the new tax-structure. When the fruits of his involuntary sacrifices are reaped, sooner or later, it will be Mr. T. T. Krishnamachari who will earn his blessings and gratitude.

If we must plan we have to learn the art of sacrifice, putting a discount on the present and a 'Premium' on the future. It may tantamount to accomplish a moral conversion to a faith in the present or future plans, but there is no way out to reach our goal of plenitude from age-old poverty. We must work and invest for posterity satisfying ourselves with whatever tittle we can have in the present.

4. **Private Savings** :—Allied to this is the fact that higher taxation tends to lower the capacity to save unless the tax revenues, on productive investment, increase the taxable capacity of the public. Accelerated development entails a heavy sacrifice in the form of less consumption, particularly of ostentatious goods which may, in some cases, mean lowering the standards of living. How to cut this vicious circle of high taxation and low savings? The solution evidently lies in the exploitation of idle resources, including man-power. The doctrine of "produce more and have more" has to be translated into practice. Or we perish. Well did Mr. T. T. Krishnamachari say: "If we are not able to reconstruct our economy (within the next three to five years) I do not think we shall ever be able to do it". The non-taxed or the low-income groups have equally great responsibility to shoulder in saving something (by tightening their belts, if necessary). Here, again, it is for the leaders to educate the masses to give up, whatever they can.

Ours is a secular State and therefore without prejudice to any religion or sect one may plead that the temples of worship of the present century should be *not* the Mediaeval places of God's worship, but the valleys and basins of rivers where power is being generated for the factories and the fields and water is being canalised for the irrigation of the parched lands. This calls for a re-orientation and re-evaluation of the religious and spiritual values of life. Not religion (of the nineteenth or early centuries) but country first should be our life-line. If the charities normally given to religious organisations were diverted for the good of the country at large, we could bring about relatively more speedily the salvation of both the present and the future generations. It is an uphill task but any procrastination or connivance on the part of our leaders, whatever their political allegiance, will be at our peril.

5. **Foreign aid** :—Counting on foreign aid, in any shape or form, is to count chickens before they are hatched. In the first instance where is the guarantee that the present gap of Rs. 700 crores in the foreign exchange will be filled up? But if unequivocal assurances from foreign "friends for the Plan" are held out as is hoped for, many unforeseen things in the international world may foil our Plans. The machines and other raw-materials may not reach us according to the time-schedule. Instability in the home or foreign currency may also affect our agreement or the clouds of the Third World War may thicken on the horizon to undo our achievements or planned projects. So foreign aid, however desirable and necessary, may not help smooth sailing of the Plan.

It was in the context of these and other factors, perhaps, that Prime Minister Nehru recently remarked: "There must be the firm resolution that whether there is any help from outside or not, we are going to face our difficulties, come what may, because faith and confidence of our people are all important, infinitely more important than money. Money does not necessarily produce faith or confidence". Internal resources in men and material, therefore, can alone provide a sustained and dependable flow of sinews for the Plan. The difficulties attendant upon the letter mode of financing the Plan are many and varied, some even insuperable. But we must accept the challange boldly and courageously, otherwise we are doomed for ever.

To sum up, if tax-revenues fall short of the budget expectations (for political or economic reasons), if savings are much too meagre, if our all-out efforts at foreign aid fail to yield satisfactory results, if deficit financing is tabooed or curbed by the inflationary conditions, if financial stringency in the money market accentuates, the only resort is to whittle down the plan targets. Such a recourse will not be a victory for the politician critics or economic experts but a victory for poverty, unemployment and economic degradation.

Conclusion

The skein of thought about democratic planning is thus difficult to unravel. One thing which consistently inspires one with confidence and faith in the Plan is, given the unstinted co-operation of all political parties even for a short period of ten more years and given uncorrupted and incorruptible public administration, the star of India will shine in the firmament of Asia, where half of the world's population lives. Mutual recrimination and fault-finding on the part of political parties will only tend to impoverish the already poor country. It will neither do good to the opposition nor to their sympathisers. Let us, therefore, avert the present economic crisis (if "crisis" it is), strengthen the Indian democracy and vindicate the hard-won freedom.

THE COMMUNITY AND ITS CONTEXT

By : **G. JAYACHANDRAN**

THE human community is the power behind every economic ambition, intellectual aspiration or social accomplishment. The inner unity and substantiation of things must be recognized in any vital procedure. These are the confluences in human ambitions and aspirations, crystallised in human experience. Central in them, a creator of confluence, as it were, is the community. The community as a sustaining, many-functioned organic pattern of life, is rural in spirit and substance. In India, it belongs to rural culture, philosophy and life. This conclusion is based on the observed fact that the continuity of rural life in India, with reference both to its inner coherence and its persistence as a whole has been far greater than the often shattered, fragile continuity of the Indian city. True, under British Raj, both in numbers and in context Indian rural society has suffered a severe decline. It has been markedly

1. The word community is used in atleast four ways-in the social, statistical, biological, and metaphysical ways, as the community is relevant to many disciplines.

uncreative, sterile, restrictive, and a monument to human defeat.

Not only were rural regions losing influence functionally and culturally in their effect on the nation as a whole; they were declining also in their inner value and significance. The lost vitality and significance is being under slow recovery with the inauguration of Rural Reconstruction Programmes since Independence. In the complex pattern of transition in which rural life today is involved, changes should not always be judged as aspects of progress; but the changes which are being set mostly in the right directions are extensive. Progress may seem small, but the instruments atleast are at hand. It is a widespread social erosion, deep in some places, shallow in others. Mahatma Gandhi was not in favour of fostering specialised efficiency and size, with emphasis on quantitative achievements in lieu of a decline in terms of a communal system of values, such as the fullness of human association, phyletic continuity and operational effectiveness through the the long rythms of natural movement and life. He wanted the Indian rural communities to live up to the ideal of a uniqe moral and cultural contribution to human history and the source of our tradition. The organic intelligence of the community survives only in a culture when there is continuity, stability and human relevance.

We have assumed during the history of our experiments since Independence a kind of moral laissez-faire in the belief that the life of good will and freedom will predominate in fair competition with other aims. This is true with most village communities of our country dedicated in the first place to democratic friendliness and quality. It is a way of life, the condition of survival. This is the inner structure of progress and peace. The progress of India depends on the restoration of human context to the basic social relations.

Until progress can be built by means such as this, economic development will be in jeopardy inspite of super impositions from above. Our economic and social programmes have a major contribution to make to human survival. That contribution is the age-old custom of organic communal adjustment within the contexs of rural and village life. The economic life of the community is complete with a modern technology and intelligence neverthless differentially oriented to the needs both of large scale production wherever it may be necessary and of efficient small scale industry distributively controlled. At the same time we cannot ignore the intimate associations that are central in the community. Viewed from this angle, the individual becomes a moral abstraction in the calculation of community's needs and welfare; for the community physically is not linear, nor in this restricted sense, scientific: it is integral. The individual is a vital particle of the group and not an influential part of the community. The parts of the community cannot be abstracted from the rest and retain communal meaning. "A separate individual", says Cooley, "is an abstraction unknown in experience, and so likewise in society when regarded as something apart from individuals. The real thing is Human Life.... In other words, 'society' and 'individuals' do not denote separable phenomena, but are simply collective and distributive aspects of the same thing".[2]

The community projects in India integrate the individual responses when the

2. Quoted from C. H. Cooley, Human Nature and the Sociol Order by Baker Brownwell, the Human Community.

participants realise that the resources of salvation are only in themselves. The intimate integrity of the human community is the prize of selfless enthusiasm, of unpretentious devotion : the stability of community efforts as symbolised in community projects and the ordered rythm of rural life are restored. Then we no more live in a milieu of human disorder. Our reproductive capacity, social stability and communal integration are all the mark of progress. In their excess they cause men to live in peace ; lacking as they are, they cause men to live in pieces.

The philosophy of education appropriate to community life rests in the contribution of art, science and culture to the perfection of those areas of life and experience that cannot be lifted out of concrete contexts. " The philosophy of education which belongs peculiarly to the small community ", says Ralph Templin, "recognizes that life is an interplay between volitional factors in the human being and enviornmental factors both natural and social. John Dewey and Mahatma Gandhi agree in this fundamental though they start at opposite ends and work through in opposite order...... "The education favouring decentralism might be described as the 'unified educational approach'. It recognizes that the community is at every moment educating us for good or ill, irrespective of what is being done through recognized educational procedures and institutions. Therefore, true education must involve a simultaneous attack upon the inner factors and outer factors which play upon life. This small community is peculiarly the setting for this approach.[3]

Mahatma Gandhi formulated a basic system of education well known as Wardha System, to evolve a synthesis of urban and rural cultures. True, he also wanted to start with small communities but his approach was wholesome and all-inclusive in the first instance. He believed the community as both ends and means in education. For him, it touched the vital organ of the community and the primary context of human growth and education.

The community life is a massive structure of directives and reactions. Their tensional equilibrium is the mark of integrated community life. These revolutions are the nuclei from which a response develops. They are essential to a planned community life, and promotive of communal aspirations.

As the perfection of the individual and the wholeness of the Community are identified on both intellectual and philosophical planes, if they are not conterminous in all other ways, so the integral community and the integral response are mutually dependent. An integral response cannot evolve except on a basis of communities. The community, on the other hand, cannot progress unless the response is appropriated to the integrity of the community. This lack of balance and of imbalance within balance is the problem, cannot, but be reckoned in carrying out our Rural Reconstruction Programmes.

3. Quoted from Ralph Templin, "Significance of Decentralisation for Community Life", Community Service News Nov-Dec. 1947 (p. 155) by Baker Brownell, The Human Community, pp. 166-167.

"ROLE OF RESERVE BANK IN RURAL CREDIT"

By: **SUNDER DASS.**

INDIA, being an agricultural country, her Central Bank must function in such a manner as to facilitate the provision of credit for the needs of agriculture. With this object in view, the Reserve Bank of India has a separate department named 'Agricultural Credit Department', the function of which are to maintain an expert staff to study all questions of agricultural credit and be available for consultation by the Central and State governments, provincial Cooperative banks and other banking organisations and finance agricultural operation and movement of agricultural crops through provincial cooperative banks and other agencies engaged in agricultural credit.

The Reserve Bank and Indigenous Banks

Some 86 percent of agricultural finance is provided by indigenous bankers and village moneylenders. Unless the indigenous bankers are linked up with the Reserve Bank, it would not be possible to provide cheap and elastic credit to agriculturists. Accordingly, the Reserve Bank prepared and circulated in May 1957, a scheme for effecting this necessary link-up of the indigenous bank with itself. But this scheme fell through because certain conditions which the Bank intended to impose upon these banks were not acceptable to them. At present, the Bank only provides remittances to approved indigenous bankers at concessional rates provided the benefit of the lower rates is passed on to agriculturists. Hence, the Bank's role in rural finance through indigenous banks has not been significant.

Reserve Bank and Cooperative Credit

The Bank has, however, helped in the provision of rural finance through Cooperative movement. Ordinarily, the farmer needs three types of credit :—(a) Short term credit, (b) Medium-term credit and (c) Long term credit.

Short-term Credit :—

Short-term credit is wanted for current needs like the purchase of seeds, manures and fertilisers, payment of wages and for meeting the various casual expenses. The Bank since its inception has been giving short-term credit to the farmers through provincial cooperative banks. It gives two types of financial assistance to these State Cooperative Agencies :—(a) Loans and Advances and (b) Discount facilities. Both these types of financial facilities are given at the concessional rate of 2 percent below the Bank Rate. The loans are made against specified securities, viz, Government Securities of 90 days' maturity, trustee securities, promissory notes of provincial cooperative banks secured by ware-house receipts or by documents of title to goods pledged as security, etc. The Bank rediscounts bills of exchange or promissory notes maturing within 15 months and issued for seasonal agricultural finance and marketing of crops. Such bills, etc., must be endorsed by a scheduled bank or a provincial cooperative bank.

During the first plan period, the Bank played an important role in cheapening and extending short-term rural credit facilities. It provided large funds to Cooperative banks. The figures of loans and advances granted by the Bank during the Plan period give out the importance of this institution to our rural economy. They are as follows :—

	Rs. in crores.
1951	9
1952	10
1953	13
1954	16
1955	20

The Bank and Medium-Term Credit

Since 1954, the Reserve Bank has also started giving medium-term loans to the State Cooperative Banks. This has been made possible through an amendment of the Reserve Bank Act in 1953, whereby the Bank can lend upto a total maximum of Rs. 5 crores for periods not less than 15 months; not exceeding 5 years. This amendment enables the Bank to finance a wide range of rural economic activities including the production and marketing of agricultural and animal husbandry products and processing of agricultural goods where processing is a necessary preliminary to their marketing, The main purpose for which medium term loans have been granted includes :—

(a) reclamation of land, bunding and other land improvements ;

(b) purchase of livestock, implements and machinery and

(c) construction of farm houses and cattle sheds. The Bank under this heading granted financial accomodation to the tune of Rs. 1.22 crores in 1954-55 and Rs. 1.30 crores in 1955-56.

The Bank and Long-Term Credit.

As regards long-term credit, the Bank takes part since 1949, in an indirect way by subscribing to the debentures of land mortgage banks which are guaranteed by State Governments. The total amount so invested till the end of June 1953 was Rs. 54 Lakhs.

The scope of the Bank's activities in rural credit has been further extended through an amendment of The Reserve Bank Act in 1955. Now the Bank is authorised to create the National Agricultural Credit (Long-term Operation) Funds and the National Agricultural Credit (Stabilisation) Funds. From the former Fund the Bank would make long-term loans to State Governments to enable them to participate in the share Capital of Co-operative institutions. The Second Fund would be utilised for the purpose of granting medium-term loans to State Co-operative Banks, etc., to enable them to repay any of their short-term loans to the Reserve Bank when on account of famines, drought etc, it is not possible for such loans to be repaid out of borrowing institution's own resources.

Research Work on Rural Credit Problems

The Bank's performance in regard to matters of research on the problems connected with rural credit and the Co-operative Movement has been impressive. In 1954, a comprehensive Report on 'All India Rural Credit Survey' was published under the auspicies of the Bank. The report made a very valuable study of rural credit and suggested many measures to improve the present rural credit system. The Bank has also been giving very useful advice to the Central and the State governments and to the provincial Cooperative banks on matters relating to rural finance such as, debt legislation, organisation of land-mortgage banks. Since the development of Cooperative organisation depends to a large extent on the availability of well-trained and adequate staff, the Bank has sponsered and subsidized the establishment of the All India Training Centre for Cooperative Personnel at Poona. Three centres for the training of intermediate personnel have been started in Poona, Madras and Pusa and arrangements for two others are under way. The Bank has also subsidized in the establishment of Centres for the training of subordinate cooperative personnel in various States.

ROLE OF AGRICULTURE IN BASIC EDUCATION

By: **Kr. NARAIN SINGH**

Judged by whatever Standard namely :—

1. Size and constitution of the holdings.
2. Implements used.
3. Fertilizers employed.
4. System of rotation of crops.
5. Quality of the Seeds used.
6. Irrigation facilities.
7. Methods of cultivation.
8. Marketing organisation.
9. Animal Husbandry.
10. Allied industries etc. etc.

Agriculture in Rajasthan is in a very backward condition. All other arts and industries have improved considerably by the adoption of the modern methods but agriculture which is the basic industry of the country is yet in its premature stage because it is in the hands of the illiterates. They have been still working on the old out-of-date practices and have no distinct agricultural policy. Policy can be chalked out by educated men who have thorough knowledge of Indian Agriculture and should also be intimately familiar with the agricultural policies and their working in every other country which has made substantial progress in Agriculture. Such people only can discover by study and experiments what elements of the Agricultural policies of the progressive countries would add to the value of Indian Agriculture. My experience of the Basic Training Institution of Jodhpur confirms my belief that to progress, Agriculture should be wedded to literacy.

We know that a very small seed has got within its cotyledons something which develops into roots, stem, leaves, flowers and fruits and grows into a giant tree when optimum conditions of air, warmth and moisture are provided. Similarly a newly born baby possesses all the faculties that develop into perfection by what is known as Education. Education is therefore, an uplifting force that develops all the latent faculties namely physical, mental, social, economical, cultural etc. etc. uniformly in perfect co-ordination with each other and makes the baby grow into an active member of the Society able to repay in the form of some useful service what he ows to it as a member of a civilized community.

A form of education which is neither responsive to the realistic elements of the present situation nor is inspired by any life-giving and creative ideal, nor trains an individual to become useful and productive member of a society, nor has any conception of the new co-operative social order but develops, not all, but only a few of the latent faculties of the baby cannot be called a perfect education.

The present system of education is, therefore, unanimously condemned and an idea of educating children through some form of productive work as a base for education has been generally agreed as it provides an integral all-sided education developing uniformly in perfect co-ordination all the faculties of a child. It is in fact education of the whole personality.

Phychologically it is desirable because it relieves the child from the tyranny of a purely academic and theoritical instruction against which his active nature is always making a healthy protest.

Socially the introduction of practical, productive work in education will break down the prejudice between the manual and intellectual workers. It will also

cultivate a true sence of the dignity of labour.

Economically it increases the productive capacity of the citizens and enables them to utilise their leisure hours advantageously.

Education imparted through the base of some craft will thus become related to actual life and its various aspects will become correlated with each other. When it has been decided that a child should be educated through any craft we have to find out which of the important crafts should become the medium of education. We know that the craft or the productive work chosen as the base for education should be rich in educative possibilities. It should find natural points of correlation with the important human activities. It should be of general interest and should be easy to adopt. It should teach the principles of co-operative activity, planning accuracy, initiative and individual responsibility and above all it should have a rural bias. Any craft which cannot be taken up advantageously in all the rural areas is not likely to be very popular and the main purpose of education through a craft i. e. learning by doing will be defeated.

Judging the choice of craft on the basis of above essentials of the education, we find that Agriculture is the only profession which fulfills admirably all the conditions. It is the basic occupation of over 75% of the Indian population and in the rural areas cent percent of the inhabitants are directly or indirectly engaged in it. Importance of Agriculture as the base of education cannot, therefore, be over estimated. This fact has further been emphasised unanimously by all the Education Commissions from time to time that Agricultural Education should be recognised as major national issue and should be given high priority on the national economic planning.

We have already seen that the primary education specially in the rural areas was not popular and the attendance in the village schools was very poor and neither the parents nor the pupils were keen about it. Children were made to attend the classes either under compulsion or under temptation. It was not their fault but our system of education was defective. It was too much literary and devoid of any craft with which one could earn his livelihood in after life. Since child remained out of touch from his hereditary profession during his school life of 6 or 7 years he lost his interest in it and failed to be a helping hand to his family members.

Another reason why the sons of the cultivators did not help their parents in their profession was the prejudice that any kind of manual labour is below the dignity of a person who has received some education, however, elementary it may be. Old method of education gave this impression to the trainees. If the village children are educated through the medium of Agriculture as Basic Craft it will keep the sons of the of the cultivators, who form the majority in the classes of the rural schools, in actual touch with their hereditary profession and will teach the efficiency of the pure seeds, improved implements and labour saving methods of cultivation and make them realise that the labour in the fields is at least as honourable as work in the office or in the class room. After receiving primary education through their hereditary profession they will not only acquire a liking for it but will be a helping hand to their parents and would be able to suggest improvements and show by practical demonstra-

tion in their fields as to what will increase their yields at a lesser cost.

They would thus make the rural education more popular. Parents would like to send their children to the schools and the children would attend them willingly. The products of such schools would be productive members of the society and their efforts would develop the Basic Industry of the country. Increased yield per acre would tide over the food shortage and the economic condition of the country would be improved bidding Good-Bye to the poverty and misery. Once full daily meal is assured to every citizen of the country at a cheap cost all other improvements, Industrial, Physical, Social and Cultural would follow without much effort.

In fact Agriculture is the foundation of all Arts and Crafts and any step to improve it will effect alround improvement. It is the only subject which can easily be tought in every rural school. It needs the least initial expenditure, gives the highest margin of profit, its products are easily marketable everywhere and are things of necessity in every family-rich or poor. Agriculture is of such a common interest and general utility that everybody would like to take it up. This is the only subject which can provide very easy correlation with all other subjects of study like Natural Science, Social studies, History, Geography, Mathematics, Domestic Science etc. They all can be taught with Agriculture in a very natural way.

If the village schools are properly managed by the Agriculturally biased efficient teachers their self sufficiency can also be improved.

Unlike other crafts, like weaving and carpentry, agriculture does not require a workshop equipped with costly appliances that entail heavy initial expenditure. It is more of a nature-study than a class room work and can better be taught in out-door excursions in a playfull manner. It has got many useful cottage industries like Dairy, Poultry, Animal Husbandry, Fruits and Vegetable culture which are both profitable and of great utility in everyday life.

This is the only profession which is free from personal rivalry. A cultivator will always be wishing for something which will do good to the humanity as a whole. He depends upon nature and nature is not partial. He will always be praying for good seasons, timely and sufficient rainfall that will give bumper crops and his neighbours and rivals will equally be benefitted by his prayers.

It is an admitted fact that marvellous changes are brought about within the last 50 years by the scientific researches in every art and profession and Agriculture is not an exception to it. All the improvements in other things have been accepted readily and adopted profitably. But unfortunately the improvements made in the premier industry of the country which have been demonstrated to be efficient and economical have not become popular. Hence the rural population has got the greatest share of poverty which brings disease, misery, sufferings and unhappiness to them.

This is due to the fact that Agriculture is yet a profession of illiterates and even the meagrely educated people think it below their dignity to work in the fields. This gulf has to be bridged and literate people will have to be associated with it so that the scientific researches may be brought home to them. If agriculture is wedded to education both will be mutually benefitted and the literate people will also begin to take interest in this

neglected profession as well as in the neglected class of people who are engaged in this profession.

Agriculture is thus likely to play a very important role in nation-building and effecting all-round improvements if it is made an integrated part of Education and if its knoweldge grows with the literacy of the masses from the primary right up to the University standard.

AGRICULTURE IN FRANCE

By: **NAUTAMLAL C. TEJPAL**

MANY of us might have read or heard about France, as a land of wine, women and songs. But very few, if any, who had even the good fortune of visiting it, have ever studied the agricultural economy or planned agriculture of France.

We know Napolean Buonaparte as an upstart, or a great soldier, but we do not know that Napolean presented to the world the Napoleonic Code. He devised the agricultural system for France that the French Army would never starve in spite of wars and civil commotions. Napoleon believed that an army marches on its stomach. First he organised the food production system and then only he started his big campaign to win the world.

Any casual visitor to France would have observed that not an inch of land is left without its proper productive use. France which was barren and famine stricken before the French Revolution, can now teach the world, what intensive farming can do.

In France, the industrialists have to establish their industries in small villages to obtain labour since the farmers would not come to urban industrial centres. An average village farmer's family in France, can spare a man or two for working in the factory, provided the factory is in the village, where he can earn something in his spare time. There are many advantages of this systeem (1) When the factory hand returns from the factory, he employs his off hours on his own farm (2) Whenever there is a stoppage of the factory due to a crisis or any other reason, he is not forced to sit idle but works on his farm. (3) The factory owner cannot exploit the worker since there is always a second string to his bow, if he is forced out of work or is poorly paid. There are very few instances of strike in the factories situated in the villages since there is no scope for exploitation by the capitalists.

In the case of big industries of Motor Cars, Aeroplanes, Railways etc. most of the labour is imported form Italy or Spain. A French farmer will never leave his farm for working in big cities.

In every war fought in Europe, France had the misfortune to be the battlefield. But due to its sound village organization her people have never suffered from starvation during or after the war. Places where the war had caused destruction had to suffer of course, but the rest of the country remained supplied with food and other necessities of life regularly.

In France, during the war, all transport and important industries are comandeered for the military, and the civilian population has to manage somehow for its own supplies. So they have organised production on war basis. Every group of ten villages is a self-supporting unit. producing its own food,

clothing and building materials, the three prime necessities of life, because during the war the Government cannot spare transport for food for the civilian population. It was Napoleon who organised farming units of ten villages.

First of all, model farms were established in each group of ten villages. Each model farm was given to be managed by a literate and successful farmer of the locality. Ten such model farms were given to one person with a Diploma in Agriculture. And ten Diploma holders were under one Graduate in Agriculture and ten such Graduates were under one Expert on Agriculture, who has specialized in the improved farming technique and is working in a Government experimental farm. So every successful experiment at once reaches the village farmer through the Model farm.

Over and above farming, complementary industries such as Sericulture (worm silk), bee keeping, sheep and cattle breeding, home wine making, food preserving and canning are taught through the model farm.

In France, the farmer gets wool from his own sheep, spins with a hand spinning wheel and weaves with a handloom. Wool spinning and weaving is more economical and practical than cotton spinning. In weaving, he mixes wool with the silk produced by himself and makes very fine cloth for his own use. In Scotland and many parts of Europe, wool spinning by hand is practiced on a very large scale even today. As its product is not marketed, we know very little about it.

Thus, in France, the farmer is almost self-supporting during peace and fully self-supporting during war. He gets 80 to 90 percent of his requirements of food, milk, honey and clothing from his own farm, poultry, sheep, and silk worms. He prepares his own wine. Remaining 10 percent of his requirements, he can easily obtain from his own village unit.

Most of the farming is done with the help of horses and a farm unit is mostly from 10 to 20 acres, a unit which a family can manage by itself without outside help, although seasonal help is taken and given on a co-operative basis.

The industrial factories of France are spread over the villages, so during the last war France suffered less damage than the centralized industries of England due to German bombardment.

When I first went to Egypt and established myself as an import export Merchant in 1924, I was importing Wheat Flour from Australia, Rice from Rangoon and Oils from Sudan. But shortly before I left Egypt in 1945, I was an exporter of foodgrains from Egypt. So during 20 years not only Egypt achieved self sufficiency but became an exporting country of foodgrains. This was achieved due to the agricultural planning according to the French Plan as above, and most of the organisers were Europeans. But now due to narrow nationalism Egypt is again suffering from financial difficulties.

We want to follow the American method of production but very few of us have tried to compare the situation in America and the situation in India. We can easily follow the French or Egyptian system. But the American system if imposed on us will upset the whole economy of our country.

In Europe most of the retired civilian or military officers as well as businessmen and industrialists have a country house with a farm, where they spend their vacation or retirement. It is a most profitable and interesting pastime to have a little farm of one's own, where

one can produce his own requirements of grains, vegetables, poultry, honey, wool, meat from sheep and pigs, and dairy products. What better life one can wish than the above? In France such farms are utilised as model farms and the model farm which is sanctioned by the Government has not to pay any land tax but has to follow the rules and regulations of model farms. So the French Government has to spend nothing and gets the best of management from highly trained Officers and business magnets.

Here, in India everyone of the most of the religious minded persons, has a small space for worship. A rich person has a temple or a mosque in his own compound. Similarly, in Europe and Egypt every businessman, lawyer, doctor or a Government Official has a small farm of his own where he spends his vacations or a convalescence period, entertains his friends and relatives and proudly shows his prize hen or giant cucumber.

We in India are investing our extra money in gold, silver or some speculative business whereas in Europe they invest first of all in a small farm so that they can bequeath good health, dignity of labour and a full and happy life to their children. After the farm, other things like gold and jewellery get preference.

The present amenities of transport and motor cars have made it easier for the city people to go almost everyday to their country-house which might have been within half an hour drive from the place of his business.

The rich people in Europe have spent and sacrificed much to improve farming methods, cattle and poultry breeding. They can afford to spend without expecting any returns from the farm and their successful experiments have greatly helped to improve farming alround, because professional farmer copies their successful experiments without any risk. The model farms are centres of education-by-doing. They also keep a record and uptodate statistics of 10 villages which are under the model farm. They supply certified seeds and proper manures, disinfectants and loan dusters and sprayers to control plant diseases besides keeping service stud bulls and stud rams.

Now in the next article, I shall discuss, how best we can adopt the above system in India, how to finance model farms and what equipments should be necessary for such Model farms.

ROLE OF FUTURE FARMERS IN DEVELOPING ECONOMIC CO-OPERATION

By : **DR. J. C. SRIVASTAVA.**

Introduction :—Rural Youth Clubs have played a vital role in the agrarian advancement and rural prosperity in number of nations. The Young Farmers of England, the youth movement of Japan, the Folk school in Denmark, 4. H club, Future Farmers and Home Makers of America have been universally commended as a useful media-of rural regeneration and extension education.

This valuable media has not escaped the attentions of our planners, and a comprehensive rural youth programme based on cultural, recreational and economic activities has been incorporated in our plan. The pilot project in youth

Extension work (Younger age group) was initiated by Planning Research & Action Institute Uttar Pradesh in June, 1954.

Need :—Considerable incentive was given to organize groups by gradual stages. Cultural and recreational activities, individual and group economic projects were introduced amongst them. The club members proved how far these young farmers had gone in such short time to achieve noteworthy results. But any programme for developing rural youths would not be complete without introducing practices of economic co-operation. In a country, like ours, where subdivision and fragmentation and uneconomic holdings laden with crushing populace has virtually killed individual incentive, such socio-economic programmes pave the way to early prosperity.

Aim :—The young farmers should be made conversant with advanced agricultural practices, mal-practices of middlemen, money lenders, dealers in agricultural implements, seeds, fertilizers by whom their fathers and fore-fathers were victimised. Without the knowledge of co-operative enterprise the rural incomes of the young farmers cannot increase, even though they grow crops with higher yield, raise healthier livestocks. Economic co-operation, therefore, should form the very basis of rural youth programmes and development of India. It will prepare the youths as future fore-sighted and advance farmers of our country, and help them to think more in terms of group welfare.

Method of developing Economic Co-operation.

1. *Co-operative Education Programme* :—They should be educated to solve their varied complex problems through collective Co-operative action. When they will come out as future farmers the background of Co-operative training will continue to influence their training, mode of living and solving socio-economic problems.

In the co-operative education the club members should be given the opportunity to plan and implement programmes in order to train them in organisational work and to enthuse a spirit of "self creative confidence" in them.

2. Formation of Co-operative Standing Committee :—The committee should have three club members selected annually along with one Youth volunteer leader, village level worker and the co-operative supervisor. They should elect their own President and Secretary.

Duties :—(1) To draw up co-operative education programme for the club for the ensuing year.

(2) Discussion and approval of the future programme by members in general meeting.

(3) Arrangements for implementation of the programme.

(4) Inviting co-operative speakers.

(5) To prepare report of the activity of the committee.

(6) Explore the possibility for co-operative action project for the club. Viz., Co-operative circulating library, Co-operative Consumers store, Co-operative farming, Co-operative poultry etc.

The main aim of the programme should be such that the members learn about co-operative work and how to practise co-operation.

How to initiate Economic Co-operation programme in stages

On the aforesaid lines the following steps for developing economic co-operation amongst the rural Youths may be tried with suitable modifications and

necessary adaptations to suit local conditions and requirements.

1. *Informal talk on Co-operation* :—Informal talk and discussion will impart a first hand knowledge and background of the subject. This should be followed by a talk of a prominent co-operator.

2. Study of Principles of co-operation by members with the help of audio-visual aids.

3. *Sight Seeing* :—"Seeing is believing". Sight seeing is most effective for enlisting interest and co-operation. The members should be taken on sight seeing tour of prominent co-operative Centres so that they may see with their eyes the kind of work that is being done, the objectives and methods of the programmes and the programmes feasibility in their own area.

4. *Initial education programme*:—This should be further supplemented by shows of film and films strips relating to co-operative, study of co-operative literature, group discussion and other media of members' education so that the members may fully understand the implications of the programme.

5. *Training Camp* :—Provision for instruction and training in co-operation are almost entirely lacking. It has become increasingly apparant that while there is considerable demand and pressure for introduction of co-operative methods amongst young farmers, this movement can grow only so fast as the number of available trained personnel permits. In order to take the first small step in introduction to carry out the work, a camp for the training of youth workers and for leaders may be conducted.

A carefully planned syllabus of study and a schedule for pilot project study may be prepared.

Caution :—A word of caution is however necessary and I shall relate why? It requires lot of perseverance on the part of the sponser to build up a sound economic co-operation programme, specially for the youth. And it is, therefore, extremely necessary that the programme be tested in a selected area and its radiation recommended only when the programme has established itself.

Selection of Co-operative project :—As part of the training course which should be more like a seminar than a class, the whole education should have bearing on how, when and for what purpose economic co-operation can usefully be employed. This also relates to the basic question of practical projects which may easily be taken up by the Youth Club members.

A few action Projects explained

1. *Co-operative consumers store* :—Through operating a consumers store the members may learn the advantages of co-operative buying. They may gain experience of management, merchandising and book keeping.

The store should start on a very modest scale even to the extent of stocking only one or two commodities which are much in demand in the locality or amongst the members. The purpose of the store is primarily to demonstrate the principles of co-operation.

Before the store may be started, the club members should be explained the principles of consumers co-operation. Further, a general policy of the organisation, share of each member, scope of service, site of store, commodities to be stored, business hours, etc., may be determined. Then comes election of board of Directors under whose direction and supervision the whole show will run.

2. *Inculcating the habits of thrift* :—The mighty role of the insignificant

copper coin or Paisa-in our life can be successfully demonstrated by laying increasing emphasis on the adoption of our traditional Earthen Bank. named by varied names, and the individuals should pool their annual savings in the clubs or co-operative bank. This sum should for the investment shares of the members can be gainfully employed for productive purposes viz. starting a poultry, purchase of cattle and their rearing etc.

Projects of co-operative poultry :—In areas where sentiments do not serve as an obstacle, particularly in Muslim or sheduled caste villages the Youth club members may be induced to take up this interesting economic programme and earn decent returns from the sale of eggs. With better organisation like co-operative society for the disposal of eggs, backed by finances and experience, this trade can turn out to be a useful supplement to the members.

Conclusion:—Co-operatives have withstood the onsloughts of trade difficulties and have emerged out as a successful financial multi-purpose Institution. If the Young Future Farmers can be made co-operative minded the future of Co-operative Movement in India will surely attain stability and with a mighty contribution of these enterprising Youths we could dream of developing the nation.

ROLE OF VILLAGE PANCHAYATS IN THE RURAL DEVELOPMENT PROGRAMME

By : **G. P. UDAWAT**

AN organisation for Local Self-Government, in a village, may be called a Village Panchayat.

Panchayat is constituted of Panchas, may be five, seven, nine, eleven or more depending on the population and area of a village.

In ancient India besides Nyaya Panchayats, there used to be other Panchayats also dealing in social matters. e. g. Caste Panchayats, Mohalla (localities or wards) Panchayats and Gram or Gaon Panchayats in the villages and towns and these had official recognition too. Such Panchayats used to decide all sorts of local matters whether social, economic, or political. A new development used to be discussed in the Panchayats before taking any final action on it. Matters relating to marriages, having a Mela or Hat or approaching the Government for any work of common good, used to be discussed in the Panchayats and their decision was binding on all. 'God dwells among the Panchas' is a well-known maxim among the villagers, depicting the impartial judgement on a disputed point, irrespective of relations the Panchas may have with the party. Caste Panchayats are still seen in the villages of India.

With the down-fall of Indian rulers and after the advent of foreign rule, the Panchayats did not get recognition of the rulers and ultimately faded away, though not disappeared altogether. The Panchayats dealing with the social customs of the Village community continued functioning in deciding their social matters.

After a prolonged struggle of about ninety years with the Britishers the tables turned and the country became Independent in 1947 and the foreign yoke was finally thrown away. The country's

popular leaders took the rigns of Administration. Constitution was framed, general elections were held under the adult franchise and our own elected popular leaders were sent to legislatures and the country was declared 'Republic' with full sovereignty.

The masses of India live in the villages. Therefore, it was thought necessary that the masses should share in their day today administration, according to their own needs, and enjoy self-government. The village Panchayats, (small Local Self-Government units) of the country were revived. The Constitution of India empowered the State Governments to enact by legislation the establishment and revival of Panchayats. Such acts have already been passed by the various States and Panchayats have been established.

The main functions of the Panchayats are enumerated below. (These do not include the functions of Nyaya Panchayats which are a seperate entity).

1. To look after the sanitation of the villages and take preventive and curative measures against the epidemic diseases e. g. Cholera, Plague, Small Pox etc.

2. Registration of births and deaths in a village and also of marriages.

3. Demarcation of Public Streets, their construction, maintenance, repairs, cleaning and to remove encroachment on such streets if any.

4. To make lightening arrangements on the Public Streets.

5. Arrange for medical relief by opening Hospitals or Aushdhalayas and the relief of destitutes and sick.

6. Maintenance of common buildings of Panchayats whether newly constructed, gifted or transferred.

7. Regulate places for the disposal of dead bodies, human beings as well as animals.

8, To establish grazing ground for the cattle.

9. To construct, maintain and repair public wells, tanks and ponds for the supply of water to the villagers, for drinking, washing and bathing.

10. Maintain record of census of all kinds.

11. To open Maternity Homes.

12. To construct and maintain public latrines and urinals.

13. To allot places for storing manures (Manure pits).

14. Promotion of agricultural developments, Cooperative Farming, Small scale industries, reclamation of culturable waste lands etc.

15. To organise Melas, religious, social (including cattle fairs).

16. To raise taxes under Government's orders and under Panchayat Act to meet the expenditure required in the performance of the above functions. The Government may empower the Panchayats to collect revenue also.

17. Lastly, any other measure of Public Utility which may help in the promotion of moral and material well-being of the villagers which may be resolved in their panchayat meetings, as and when they feel it necessary for the convenience of their brethern. The Panchayats will also have to carry out the orders of the Government, in this behalf.

Besides the above main functions the Panchayat may have certain discretionary duties and functions which may also be briefly enumerated as follows :—

(a) Planting of trees at the road sides, common places and keep their maintenance.

(b) Keep and maintain stud bulls supplied by the Animal Husbandry

Department and arrange medical facilities for the cattle.

(c) Place Radio sets and other recreational material at public places.

(d) Develop multi-purpose Co-operative Societies in the village for the distribution of improved seeds, implements, fertilizers etc. in consultation with the Agriculture and Co-operative Departments.

Thus a Panchayat is a body with almost all sorts of functions entrusted to it. The success of the Panchayat depends on its Panchas. If the members are aware of their duties and responsibilities, the Panchayat will undoubtedly work more successfully. The present condition of our villages is not so advanced, as it should have been, because of the widespread illiteracy and ignorance of the masses residing in them.

But we have to go ahead with whatever human material we have at our disposal and make the best use of what we have. With this idea in view the Panchayats have been formed and are being formed in almost all villages in our country. Training will be imparted to the Panchas and necessary guidance will be given at every step till such time as they become fully conversant with their duties and responsibilities and find themselves capable to carry out the work independently. Separate staff has been appointed by the Government for this purpose.

We are often told that at certain places the Panchayats are not working satisfactorily. Since this old institution has only recently been revived, it is but natural that time and experience will set alone things right, provided of course, the people too have aptitude to learn and to improve their lot under proper guidance.

We have now to see, how these Panchayats could help in the Rural Development Programme of the Country which is a part and parcel of their duties. From the functions stated as above, we may conclude that the Panchayats can be successfully utilised for the development programme.

The Panchas are generally elected by the villagers under adult franchise or in some cases may be nominated also. Often, in most of the cases, village leaders and influential persons of the villages are elected as panch. These people are supposed to be more intelligent, respectable and ready to adopt new ideas. Therefore, if these people are tackled tactfully, more than half of the battle is won. Since most of the villagers are still conservative to accept any new ideas, one should deal with them sincerely and consciously through a right approach.

Items of Rural Development Programme

Let us now see the items of Rural Development programme with which the village worker has been entrusted and for which targets have also been fixed. The V. Ws' are required to submit periodical reports for the same. Then we may see in what items the village panchayats can be helpful.

I. **Agriculture.**

(1) Compost Pits and their use thereof.

(2) Town compost in areas near Municipalities.

(3) Artificial Fertiliser.

(4) Green Manuring.

(5) Pidigree seeds (Use and multiplication thereof).

(6) Selection of better seeds at harvest time.

(7) Establishment of Model Farms.

(8) Laying out of demonstration plots.

(9) Holding crop competitions.

(10) Plant protection work.

(11) Summer ploughing.

(12) Sowing of crops in lines.

(13) Introduction of improved agricultural implements.

(14) Farm Bunding to check soil erosion.

(15) Vegatable growing.

(16) Orchard planting.

(17) Sericulture-Raising of Mulburry trees thereof.

(18) Introduction of Rubber Tyre carts.

(19) Storage godowns, their construction and use.

(20) Bee Keeping.

Irrigation.

(1) New surface wells.

(2) Repairs and deepening of existing wells.

(3) Filter point Tube wells.

(4) Use of pumping sets.

(5) Construction of Nadis.

(6) Desilting and repairs of the existing tanks.

(7) Construction of Repats (small bunds) to store water.

II. Animal Husbandry.

(1) Telling people about the care and feeding of their cattle.

(2) Making them preventive minded with regard to their cattle and their diseases.

(3) Castrations.

(4) Inoculations.

(5) Pedigree stud bulls, their maintenance and use thereof.

(6) Construction of Foot baths and sheep baths.

(7) Silo pits and making of silage.

(8) Introduction of better kinds of green fodder i.e. Berseem etc.

(9) Segregation of useless cattle.

(10) Introduction of improved types of cattles, sheep, goat etc.

(11) Poultry farms and introduction of improved type of breeds i.e. whiteleg horns.

(12) Organisation of cattle fairs.

III Forest and Tree Plantation

(1) Village Fuel Reserves.

(2) Planting of trees on Nadis tanks.

(3) Planting of Moonj on sand dunes.

(4) Planting of economic trees along water channels where possible.

(5) Raising of Fruit Plant nurseries.

(6) Distribution of seeds of various forest trees e. g. Babool etc.

IV. Village Sanitation and Health

(i) Making Panghats (drinking water wells, sanitary and disinfecting the same.)

(ii) Construction of soakage pits, urinals, borehole and deep and shallow trench latrines, according to the needs and possibilities in the villages.

(iii) Engaging sweepers to clean the above village localities.

(iv) Drainage system in the villages.

(v) Improvement of Rural Housing by ventilation.

(vi) Introduction of smokeless chulas

(vii) Levelling of village streets.

(viii) Anti-malaria activities, vaccination to be carried out.

(ix) Training of mid-wives (Daies).

(x) Arrangement for street lighting in the villages.

(xi) Organisation of health weeks and baby shows etc. and have competition for the same and award prizes.

V. Social Education.

1. Start community Recreation centres.
2. Sports and games clubs.
3. Adult literacy centres in the night.
4. Reading rooms where newspapers and simple books to be kept-installation of Radios.
5. Construction of school buildings.
6. Cultural and Recreational activities.

7. Encouragement of local leadership.

8. 4H Clubs.

9. Social Melas.

VI. **Cooperatives and Cottage Industries.**

1. Consolidation of existing societies and weeding out unfit ones and amalgamation of others where necessary.

2. Multi-purpose Co-operative Societies.

3. Construction of Co-operative buildings.

4. Training personel for Coop. Sub-Inspector, local Secretaries, etc.

5. Distribution of improved seeds, fertilizers and implements etc. through-Co-operative Stores.

6. Opening of training centres in cottage Industries etc.

From the items stated as above, the following items can be safely entrusted to the Panchayats.

Agriculture. 1. Manure pits for storing farmyard manure :—

Panchayats are to allot places for digging manure pits and also to enforce sanitary laws. The villagers can be persuaded to store manure in these pits. This will give double advantage, well preserved manures and cleanliness in the the villages. The Village worker will guide in digging the pits and how to preserve the manure in it.

2. Orchard planting :—

Panchayats can lay out orchard and nurseries on common land suitable for the purpose under the guidance of the technical experts.

3. Seri-culture.

Mulberry trees can be raised by the Panchayats which can ultimately lead to silk industry under the advice of the cottage industries expert.

4. Storage of Godown :—

Seed store buildings can be constructed by the Panchayat and can be ultimately rented to the Agriculture Department or Co-operative Stores for storing seeds and manures.

5. Animal Husbandry.

Pedigree bulls supplied by the Department of Animal Husbandry to be kept and maintained by the Panchayat, who can segregate the useless cattles also.

6. Organisation of cattle fairs by the Panchayats.

7. Raising of fuel trees and moonj can be undertaken by the Panchayat.

8. Village sanitation and health. Constrution of drinking water wells (Panghat) and disinfection of the same.

9. Digging of soakage pits.

10. Construction of bore hole latrines, deep trench and shallow trench latrines or other types of latrines according to their possibilities and requirements.

11. Engaging sweepers for cleaning the same and the town.

12. Introduce drainage system in the villages.

13. Approve plans for the construction of new houses as is done by the Municipal Committees. Appoint Sanitary Inspector-cum-overseer for the purpose.

14. Construction of new streets and improving the existing ones.

15. Vaccination and Anti-Malaria compaign can be organised.

16. Training of mid-wives and opening of such centres for the training of crafts to village women can also be started by the Panchayats.

17. *Social Education* :—Opening and supervision of community recreation centres.

18. Organise sports, games etc. and youth welfare clubs like Farmers Youngmen clubs on the lines of 4 H club etc.

19. Literary centres.

20. Organisation of Kisan Melas.

21. Disemination of information among the villagers.

22. Displaying radio sets at a common place in the village or at the community centres.

23. Arrange Cinema shows, Bhajan Mandlis.

24. *Cooperatives* :—Work as leaders for the formation of various kinds of Cooperative Societies.

25. Prepare young villagers for the training of candidates for cottage industries; etc.

26. To undertake the uplift of Bhils, Sanitries, Baories and Kanjars etc.

Thus, it will be seen that where efficient Panchayats have been formed, many activities of village development programme can be successfully carried out by them in close co-operation of the various technical departments.

Efforts should, therefore, be made where possible to entrust the Panchayats with some of the above activities. This will not only popularise the Programme but place it on a footing of permanant nature.

A NEW SLOGAN "GROW GREEN MANURES"

By: **K. K. MANDLOI**

ONE of the main reasons for the general low level of agricultural production in India, is the widespread acute deficiency of soil nitrogen and there has, of late, been increasing recognition of the fact that no effort for improving production will succeed if it ignores this fundmental fact.

Shri M. S. Sivaraman, Adviser, Programme Administration, Planning Commission, rightly emphasises that of all the commonly available sources of nitrogen, green manure and rural composts have distinct possibilities of wider application, provided a simple method can be found to enable the average cultivator to take to these at very little extra cost. If the cultivator can grow the required green manure seeds without setting apart land for this purpose, if he can raise the green manure without foregoing a crop, if he can raise near his land the leaves and plant materials required for composting without affecting his crop, if he can produce the composts in a part of his fields and avoid the problems of transport, then we should have found the key to some of the difficult problems of agriculture.

Such a method has since been found. In every field, whether irrigated or not, it is now possible to produce its full requirements of organic manure in all areas with over 20 inches of rainfall. By growing green manure plants or shrubs on the borders of fields, it has been demonstrated in all parts of Madras in widely varying soil-climatic zones, that the usual crops are not affected. On the basis of this information, a campaign for growing different green manure plants has been launched this year. This programme has been intensified on all Government Farms, N. E. S. and Community project areas.

Besides, the already prevailing use of green manure crops like Sann hemp, green Mung etc., a few new introductions have been made. All of these are grown this year on Powarkheda farm (M. P.) purely with the object of

collecting seed for the next year, since seed available was insufficient for direct use as green manure crop. Where soil moisture is inadequate, composting of these green manures should be resorted to. These different green manure crops are :—

(1) *Sesbania sireca*—Seed of this species was obtained from the Rice Research Institute, Cuttack. From amongst the three different species of *Sesbania* being grown, this has the best growth. It can be differentiated from the other two species by its luxuriant growth (since it is the tallest) and yellowish green colour. It has a good deal of green matter. *Sesbanias* are annuals but can be also grown as perennial shrubs on field borders and can stand repeated loppings.

Sesbania speciosa—This is the second best species showing good growth. It has also sufficient green matter. It has whitish green colour and can be easily identified by its velvety touch.

(3) *Sesbania aegyptica*—Yet another species of *Sesbania* which does not seem to grow well. It is short in stature and the poorest in growth. The green matter content is also very much less on account of tiny leaves. This character helps its identification.

(4) *Sesbania aculeata*—This species of *Sesbania* is found commonly growing in wet places. Stem and leaf stalks of this variety are prickly. Seed will be collected this year.

(5) *Phaseolus semieretus*—Seed of this variety was also obtained from Cuttack. It has a good leafy growth and as such is rich in green matter. It does not grow very tall and is a twiner by habit. Being quite soft and succulent, will get decomposed readily.

(6) *Aschynonera americana*:—Another green manure variety from Cuttack. It quite resembles and reacts like "Touch Me not". It is also very soft and succulent, a quality very essential for quick decomposition. Green matter content is also sufficient but less as compared to *Phaseolus semieretus*. It is a late variety.

(7) *Inomea carnea* :—A large number of cuttings of *Inomea carnea* have been planted on field bunds and along the 'Nalah' passing through the farm area. It is a perennial variety, not eaten by goats or cattle. This variety would act as a reservoir of green matter because loppings are cut and composted. The idea of planting them along the field bunds is that they would form a good hedge and it would be very convenient to dig a compost pit near about for composting the loppings. The plants have no shade-effect on the crop.

(8) *Indigofera tysmenia*—This also is a perennial plant. Unfortunately, the seeds failed to germinate properly with the result that only a few plants are now available in the nursery for seed purposes.

(9) *Cassia tora*—(Tarota or Powar)—This is a widely growing weed with luxuriant growth. This can easily be composted. The use of this abundantly growing weed for composting would serve a dual purposes. In the first place it would lead to the eradication of this weed so that grasses will grow better and secondly it would be composted leading to increased soil fertility. Seed of this weed will also be collected during this season.

(10) *Xanthium strumarium* (Gokhru) This is another commonly occurring weed. This can also be used after the manure of 'tarota' or 'Powar' for composting.

Thus, every field can and should be a factory as it were, to produce its basic requirements of organic manure without detriment to the normal crops raised or the prevailing cropping methods. A concerted effort is, therefore, being made to convince the cultivator that with a little systematic effort he can grow every year all the organic manure for his fields and thereby not only improve the yields but also reduce the cost of cultivation.

MECHANISATION OF AGRICULTURE IN INDIA

By: **G. R. KOPPIKAR**

Continued from June issue,

Size of Agricultural Holdings :—As the situation stands at present in India the conditions regarding the adequacy of the area to carry on a satisfactory working of the tractor are remotely far from satisfactory. "The minimum area on which a tractor can be economically used is 150-200 acres" (13). The average size of agricultural holdings in India is only 3 to 12 acres as against 145 acres in U. S. A., 234 acres in Canada, and 1600 acres in Russia (16) The average size of the agricultural holdings in the different States in India is shown in acres in table VIII

Table VIII

Bengal	2.4	Bihar & Orissa	4 to5
Mysore	6.5	Punjab	7.2
Madras	4.5	U. P.	6
M. P.	8.5	Bombay	11.7
Hyderabad	12		

It will be many years before the move to consolidate and prevent the subdivision and fragmentation of agricultural holdings now just started in only some of the States in India can any hope be entertained to achieve the minimum requirement regarding the area of individual agricultural holdings.

Rice is the staple food crop in India. Its importance together with the peculiarities in the cultivation practices of the crop necessitates a consideration of the problem of mechanisation as affecting its cultivation. It being a water-loving crop, the land is laid out into small plots surrounded by bunds so that water can be made to stand in the standing crop during the major period of the life of the crop. Apart from the tillage operation in the dry land the operations such as puddling in plots can be started only after the soil is well saturated with moisture. In view of these conditions the obstacles in introducing tractors in the cultivation of paddy are (a) the small plots bound by bunds and (b) the wet condition of the soil to be cultivated. It is claimed that small wheel type of tractors of 25 to 40 M. P. can be relied upon to serve the purpose since it can work efficiently in small areas and can jump over the bunds without being obstructed and without damaging the bunds (18).

However, a few important considerations seem to have escaped consideration. It has been experienced in Bombay State that the minimum area of each small plot for a satisfactory working of the smallest tractor is at least 4 gunthas. In most of the cases where the system of small plots is adopted the area of each plot is far less than this minimum requirement. This small size as well as all sorts of irregularities observed in the shape of the plots are forced upon the cultivator by the extremely small size of the pieces of land in the wake of the evil of subdivision and fragmentation and the topographical irregularities. The use of wheel type or track type of tractor in paddy fields presupposes the dry condition of the soil with an optimum moisture content of the soil as is obtained in the case of most soils immediately after the harvest of the previous crop, because any amount

(14) किर्लोस्कर July 1949.

(15) Shri Vithaldas Kothari (लोकभवन — Vol. IX, No 2)

(17) Prof. R. B. Lal Sharma (Rural India Vol. XIX, No. 2)

(18) Prof. S. L. Doshi (Rural India-Vol. XV, No. 9)

of moisture beyond this limit means too slippery a condition for the working tractor. However, by nature paddy needs much moist condition than is tolerated by tractor whether the crop is cultivated by transplanting or drilling. Moreover, in the wet condition of the soil in the standing crop working by a tractor is unthinkable. Thus, the extremely small size and irregular shape of the plots and the wet condition of the soil rule out the use of a tractor in the paddy cultivation at least in the present-day conditions.

To get over the defects in crop-production in consequence of small-sized holdings, arguments are advanced to convert the system of individual ownership into Co-operative Farming or the collectivisation of land on the pattern of the Kolkhozes in the U. S. S. R. with all due recognition to the benefits these systems have brought about. It is, however, desirable to ponder over the merits and demerits of these systems against the background of the peculiarities associated with the agricultural occupation in India. According to a Western expert, "So far it has not yet been proved that given equal opportunities, family farming could be beaten in the costs of production and in the technical and economic performance by large-scale farms, no matter whether these are privately owned or managed by estates corporations or collective farms. So far the highest technical and social performance of every sort of agricultural production, even with its many disadvantages and discrimination against it have been accomplished under the whole range of climatic conditions, by family farmers,* thus expressing the superiority of peasant-farming over large-scale farming as an established fact (19). In the U. S. S. R. where until 1928 efforts made to convert individual holdings into communal ones met with stout resistance by peasants inspite of untold tyranny and forcible destruction by the rulers which ultimately humbled the authorities to recognise individual ownership over very large part of peasant's possessions inspite of large-scale collectivisation of land and "by 1935, 4% of the rural land in Russia formed private gardens" where the peasants could have cows, chickens and other small animals and cottages of their own in the kolkhozes. In collectivisation India will have the following difficulties (20) :— (a) the intense pride in land ownership. (b) The absence of under-developed areas. (c) The absence of industrialisation of the country to supply the necessary heavy farm machinery and its spare parts. (d) the existence of a large class of 'middlemen' whose liquidation was essential in Russia before collectivisation could succeed.

Problem of Trained personnel :-Machinery is a non-living article in the sense that it is unable to carry on the work by itself without being attended to by the caretaker to recoup it to normal condition once it goes out of order without necessary rectification effected by the personnel in the know of the details such as its construction, working and its normal requirements. This naturally leads to the obvious conclusion that an army of technicians well equipped with the knowledge of both theoretical and practical aspects regarding the machinery should spread all over the regions so as to make the technicians available to meet the needs of the cultivators handicapped by the crippling of the machinery in their possession. The ideal condition that can be aspired to

(18) R. S. Basrur (शेतकरी—October 1949)

(19) Shri Bundhudal Sen— "The Bhoodan Movement".

(20) Dr. H. H. Mann (Nagpur Agricultural College Magazine Feb. 1939).

would be, imparting an adequate training to the cultivator himself so as to make him independant in this aspect in the form of cultivator-cum-technician. In any case the picture in India at present is very dismal and the *paucity* of adequately equipped institutions well-spread all over the country to which the high cost of training compared to the general poverty of the country is added worsens the situation.

Cost of Machinery and its maintenance :—In a povery-stricken country like India one of the needs of the foremost importance is the cheapness of the necessary machinery. This obviously would mean an efficient manufacture on a sufficiently large scale with the raw materials and other necessaries in the manufacture available cheaply. This apart, in the interest of the cultivator use of the machinery should not mean high cost of maintenance, low returns resulting from the use of the machinery, a deteriorated quality of the produce from the farm caused by the machinery following its use and higher cost of its working than whatever would have been otherwise spent on the manual and animal labour which its use seeks to replace especially in view of the limited period during which it can be used under the conditions prevailing at present in India. The low level of the manufacture of the machinery in general in India has compelled the imports of the same to be made from outside which has naturally culminated in highly prohibitive costs of machinery especially when the deal is to be entered into with hard currency areas of the world. Such a drain of money on a large scale is bound to be a terrible strain on the economy of the country which it can ill afford. According to Shri Jabir Ali, on a long term basis the working with the help of a tractor amounts to an expenditure in the neighbourhood of Rs. 40/- per acre while the same is Rs. 25/- in the case of the use of bullock-power, and the cost of a 60 H. P. tractor together with its accessories works out to near about Rs. 60,000/- which by way of interest on it extracts a further Rs. 3600/- to Rs. 6000/- per annum (15). The cost of mechanical irrigation per acre in the Punjab has been found to be 211% of that of Persian wheel drawn by bullocks (13). The cost of its maintenance throughout the year with much of the period without any work for it under the existing conditions is an additional drawback. What is true of the whole machinery is true of its spare parts. The lamentable dependence on other countries for the supply of the spare parts inevitably obstructs the work by the machinery lying idle for want of the parts and paralyses the operations to the ultimate loss to crop production.

As for the quality of the agricultural produce obtained in the soil worked by the heavy machinery some scientists have given vent to their opinion that "by deep digging by tractors the protein protecting substances are destroyed and the soil gradually becomes less fertile" (13).

Full time engagement of machinery :—The Tractor and heavy machninery cannot but be put to use throughout the year to keep it a good condition, control the cost of its maintenance to a minimum, reap the fullest benefit from the capital invested in its introduction and maintenance and obtain handsome returns from the cultivation with their help. With this end in view the tractor must be used for a minimum period of 1800 hours in a year (13). However, the actual position is very disappointing. The 'utilization availability' of the tractor being very low since "a tractor perhaps used in more operations than any other implement or machine, will not be in

use for more than, on an average, 1500 hours in any one year" (2) and with the possibility of using the tractor in more operations than any other implement or machine being very little in India due to various reasons this aspect of the utility of the heavy machinery is far from being hopeful.

Problem of Employment of Manual and Animal Labour

The high potentialities of heavy machinery in production invariably leads to the replacement of the same in the case of the manual and animal power which in other words means throwing the latter out of employment and utility. Between 1925 and 1935, England and Wales saw a decrease in the number of workers by 14% following the advance of mechanisation (2) The Giri Committee's Report on Agricultural Labour has emphasised that the period during which agricultural families are employed in India is only 218 days in a year and that "There are 82 clear days of leisure to every one of the labourers after allowing 52 weekly holidays and 13 extra festival days". The report further opines. "If only work could be found for them for these 82 days at the same rate of wages as they got in agriculture many of them can hope to have a better standard of life free from the depressing weight of debt" (ii) With this deplorable condition of labourers in India and the growing population in the grip of the ghost of an ever increasing unemployment in general which has compelled the planners to make a large expansion of employment opportunities. One of the grave problems to be solved during the Second Five-Year Plan of India during which an additional 15.3 million jobs are planned to be created "to eradicate the unemployment". Even with the large-scale mechanisation in agriculture in particular still in its infancy the magnitude of unemployment can easily be depicted in the event of a largescale mechanisation in agriculture with an ill-balanced relation between agriculture and the growth of industries.

Fuel Problem:—What is food to human beings and fodder and feeds to animals is fuel to machinery. The tractor requires petrol and allied products for its running. Even in normal periods India has to look to other countries for the supply of these products, there being very meagre or no deposits of these products in India. The painful experience of the shortage of these products in India during the abnormal periods such as those of world wars is still too vivid in our memory to brush it aside lightly. Moreover, the world-wide threat of a steadily depleting stock of these products wherever they are available in the earth to-day is causing a serious concerne to all. In view of the utter helplessness of India in the matter of the availability of fuel for machinery it will be an utter height of folly to rely unduly on the large scale introduction of and dependence on machinery.

Work in relation to the Energy supplied :—The high efficiency of the tractor and heavy machinery in the turn-out of the farm work should not blind us in considering the aspect of the proportion of the work turned out in relation to the energy supplied in the form of fuel or fodder and feeds fed to the tractor or animals respectively. In the opinion of M/S. Henry and Morrison a horse working at a full capacity converts "about 8% or more of the gross energy of its feed into actual useful external work" Adding the energy used during work in moving its own body the efficiency can be reckoned to be 15% or more. As against this the evarage efficiency of the tractor as revealed by 65 tests comes to 13.4% (21). Even allowing far any possible

slight errors in these estimations and calculations the efficiency of the horse can be deemed as at least on par with that of the tractor. The bullock tracing its adaptability to the draught purposes under Indian conditions from times immemorial can be justifiably equalled to the horse under western conditions in efficiency of work in relation to the energy supplied to it.

Soil Fertility: The effect on the soil fertility of the working by heavy machinery on it continuously for a considerably long period of seasons is a very important matter. A few stray instances of a high level of crop-production here and there can be hardly convincing when scientific observations supported by the experimental conclusions point to the contrary. According to Sir Albert Howard, in Eastern (tropical) countries "too much cultivation and deep ploughing would oxidise the reserve store of nitrogen in the soil in the form of organic matter". And according to Miss E. B. Balfour, due to the lifting power of the heavy implements hauled by the tractor being counteracted by the pressure of the latter and due to the non-adjustability of the depth of the tractor plough to hard, tough or sticky soils, heavy soils become shallow as a result of continuous cultivation with tractors. So eminent a scientist and thinker as the late Prof. Albert Einstein had, in a message sent specially to the Indian cultivator in June 1948, uttered the warning that with the use of huge tractors, machinery and chemical fertilizers production could be forced up for a time but in the long run they would result in the loss of fertility and incalculable and irreparable damage.

An account pertaining to the consequences of deep and shallow cultivation of the soil in the light of the results of experiments is instructive. At the Indian Agricultural Research Institute, New Delhi, ploughing deeper than 6 inches has been found to be of little advantage and it has been *shown* that repeated shallow cultivation should be given to the land where sugarcane is to be raised. At the Research Farm, Dharwar, the response of Jawar (Kharif), cotton and wheat taken in a three year rotation, to deep and shallow cultivation is shown in table IX in the form of the average of the yields from 1914-15 to 1922-23.

Table IX

Yield in lbs. per acre.

	Jawar (Grain)	Cotton (Kapas)	Wheat (Gr.)
Deep ploughing (9to 10 inches deep) Every Year:—	917	615	568
Deep ploughing once in three years to Cotton:—	1,142	604	583
Shallow ploughing (4 to 5 inches deep) twice in three years to cotton and wheat:—	1,164	563	508

The data show that Jawar benefits by shallow cultivation, wheat is benefited by deep cultivation given once in three years to the previous crop of cotton and that deep cultivation given every year is beneficial to cotton. In general, shallow rooted crops need shallow cultivation and deep rooted crops, need deep cultivation. Wheat is seen to be benefited by deep ploughing once in three years to the previous crop of cotton probably because of the good root development of cotton extending to greater depth due to the ploughing resulting in its using the nutrient from the deeper strata in the soil and thus saving the nutrients in the upper layers for the following crop of wheat which is shallow rooted. (The difference in the yield of wheat following deep ploughing given to cotton every year and once in 3 years does not seem

to be of much significance as also that between the yield of cotton for the same treatments). In the absence of deep ploughing to cotton its root development must have restricted to shallower layers which must have been already exhausted a great deal by the previous crop (jawar) which is shallow-rooted. Hence only the remnants of the nutrients in the shallow layers must have been utilized first by cotton and then by wheat following it resulting in the less yield of both of them. From this it can be inferred that the benefit to wheat (a shallow-rooted crop) by deep ploughing to the previous crop (cotton) is not a direct effect of the ploughing, but is an indirect one in the form of the preservation of the richness of the shallow layers of soil due to the deep roots of cotton feeding on the deeper layers of soil. Also, it is worth-remembering that the deep ploughing in this experiment was done not with the help of a tractor but with the help of bullock-drawn ploughs which cannot be expected to open the soil as deep as the tractor-drawn heavier ploughs.

At the Institute of Plant Industry, Indore, deep ploughing by an inversion plough was found to lower the tilth index due to the use of heavy implements as shown in table X.

Table X

Tilth Index	Interculture.			No interculture		
	No Cultivation	Ploughing, with deshi plough	Ct 2 inversion plough	No Cultivation.	Ploughing with deshi plough	Ct 2 inversion plough
	9.9	7.3	6.4	11.6	6.4	5.6

In U. S. A. where deep ploughing is done to reduce wind erosion in sandy soils it has been experienced that "after deep ploughing it is still necessary to grow cover and soil-improving crops, to mulch crop residues into the surface, and to use other vegetative practices if the deep ploughing is to bring lasting benefits." According to H. A. Taff, "although bringing temporary control of wind erosion, deep ploughing has also caused run off and increased the tendency to water-erosion". In U. S. A. deep cultivation (soil inversion) is estimated to have eroded more than 100 million acres of land. Thus, examined from different view points it can be concluded that deep cultivation as associated with heavy machinery and tractor is not paying under the conditions found in India and "in general shallow depth of ploughing as obtained by 'country' plough is the most practical depth to plough. Just enough cultivation and the abandonment of it to keep down weeds and maintaining soil in a receptive condition to absorb rainfall is the most efficient cultivation. Any thing in excess of this bare minimum is superfluous and must be avoided. Timely cultivation and not frequent cultivation should be the ideal".

Thus, getting farm work done continuously by tractor adversely affects crop production affecting the physical condition of the soil and its fertility in general. The figures of higher crop yields following deep cultivation with tractor as shown in Table VI can hardly deserve any reliance in view of their having been supplemented by no other necessary details such as previous treatment of the soil, nature and type of the soil, the quality of seeds, other cultivation practices, crop rotations etc.

The Nawab of Bhopal whose land holding compares very favourably with

the holdings of the highly mechanised type in the Western countries in almost all respects except perhaps the climatic factor had recently narrated his experiences and opinion about the role of machinery in the farming practices. In short they are as under. "Given ideal conditions such as normal monsoon, winter rains, timely sowing, proper manuring and sufficient sunshine, 75% to 80% of the farm work can be done by machine. Farm machinery cannot totally replace human labour., and when the elements are not helpful greater reliance has to be placed on manual rather than mechanical labour. There are occasions when machines cannot be economically operated, e. g. the use of harvesting machines in a crop which has lodged causes a loss of about 40% of the grain, while human labour reduces the loss to only about 5%".

Alternative to the tractor :—The foregoing passage have exposed and highlighted the limitations and drawbacks of the use of heavy machinery and the tractor in farming in the existing conditions in India. This obviouly lays stress on the utilization of animal power with such implements as can be drawn by it with the maximum power of traction at its disposal. It is claimed that the horse is stronger and more adaptable to such work than the bullock. However, the high atmospheric temperature in the tropical countries has been accepted to tip the scales in favour of the bullock whose body temperature is 101 F. to 102 F as against 100 F of the horse and thereby, whereas it remains mostly steady in the case of the bullock it very often increases in the case of the horse in the hot climate in India. Any rise in the body temperature beyond normal in this manner for sufficiently long time easily incapacitates the animal proportionately.

The role of the cattle in India :—The association of the cow with the agricultural economy in India is ingenius. Apart from its own utility it provides the living traction in the form of the bullock and they both together play a very vital role in the agricultural as well as the non-agricultural economy. The financial aspect of the resources obtained annually from the cattle in India is as follows.

Milk and Milk products-Rs. 800 crores.

Ploughing and Agricultural labour Rs. 1200 crores.

Transport..........Rs. 300 crores.

Meat...........Rs. 120 crores.

Hides and skins.........Rs. 50 crores.

Dung............Rs. 1000 crores.

Total 3470 crores.

On comparing the total amount with the annual contribution of other industries viz. iron and steel, cotton textile and yarn, jute, sugar and coal which together amounts to Rs. 832.5 crores the importance of the cattle industry becomes too clear to be discarded. "The gross contribution of our cattle is nearly 40% of our National Income."

The important aspect of the cow as the source of manure from its dung deserves special mention. "A cow out of 100 parts of her feeds returns 80 parts in manure. If the cattle are on farm the farms lose only a fraction of fertility via dairy products as compared to crops which cannot also yield as much manurial value as the cow". "About three quarters of the nitrogen consumed and about nine-tenths of the phosphate and potash are voided by the animal". The potentiality of the cattle dung as the source of other vitally important plant-nutrients is clear from the inorganic composition of Farm yard Manure as mentioned below.

Iron -1.8% Soda-2.7% Magnesia-1.0% Phosphoric acid -6.4% Potash-2.7% Lime-8.3% Chlorine 2.7% Sulphuric acid-3.6% Silica-66.4% Cabonic acid 4.5%

With all due recognition of the highly coveted green manuring crops as the cheapest source of organic manure, it should be said that these are only second to the farm yard manure prepared from the cattle dung. The green manuring crops occupy the land for a season from the time of their being planted to their complete decay in the soil and thus cause the loss of a season. Whereas the feeding of the residues of the farm crops to the cattle ensures a regular supply of dung from them which is the raw material for the manure, with the crop husbandry carried on simultaneously unhindered. Secondly, the manure yielded by the cattle is a better type of organic matter than that obtained from the green plants in view of the fodders being subjected to the metabolic processes inside the body system of the cattle in the former case whereby only carbohydrates are absorbed and the addtional nitrogen is supplied through their waste products. The crop needs nitrogen and not carbohydrates from manures since carbohydrates are mostly fixed in the plant body from the atmosphere during the process of metabolism. Thus, the carbohydrates in the green manuring crops are wasted in the soil while those in fodders and feeds are utilised by the cattle to supply an enriched manure without obstructing the regular course of crop-cultivation. The invaluable cattle urine which forms 25% of the wastes exerted by the cattle and which, as it is obtained from the body of the animal, contains 50% nitrogen, 1% phosphorus and 84% potash, is an additional advantage over any other types of manures and ferilizers as observed in the experiments on the New Jersey Agricultural Experimental Station in U. S. A.

Thus, the superiority of the usefulness of the cow and the bullock which she yields, over the dependence on tractors is of paramount importance. It is to be emphasised that with no full employment available to the existing man-power and animal-power at present in India the case for parasitic introduction of the tractor and machinery cannot be made. Apart from the work on the farm, the bullock can be usefully employed throughout the year for a variety of other types of jobs such as transport, oil-seed crushing etc.

Possibilities of Duel Purpose breeds of the cow :—India needs such cows which are good milkers and simultaneously yield useful bullocks for draught purposes if justice is to be done to the cultivator's poor economic condition and in view of the diversity of climatic conditions prevailing in the different regions throughout India, since the acclimatisation of different breeds of cattle is restricted to certain regions only. At present all breeds can be used for draught purposes while very few of them are good milkers economically. Thus, the crux of the problem is the introduction of the milk-producing ability in all the breeds. The results of experiments (as shown in table XI) carried out in this direction at the Gilligan cattle Breeding Farm, Pimple (Bombay State) since 1936 on the Nimar Breed which is noted for its heavy draught qualities are very encouraging, and such attempts and results are possible in the case of all breeds "by requisite care in breeding and feeding, two things which every farmer can do. Much headway has been made in the direction of early maturity, regular calving, shortening of calving interval, reduction

in dry period, and increase in the rate of growth of the animal without impairing the draught quality of the male progeny."

Table XI

Year	Average milk yield per lactation (lbs.)	Daily average yield of milk per cow (lbs.)
1936 ..	200 to 300	3
1940–41	726	3.9
1950–51	786	4.7
1952–53 (first 6 months)	1,865	8.1

The cow has rightly been called the backbone of agriculture in India. Even a foreigner like the former Viceroy of the British India, the late Lord Linlithgow who was well-enlightened with and greatly interested in the problem of cattle development in India, remaked, "The cow and the working bullock bear on their patient backs the whole structure of Indian Agriculture", and we can ill afford to neglect this fact.

It is often suggested that the cows may be retained for milk and milk products and bullocks slaughtered for meat purpose retaining a few of them as bulls for breeding purposes. In this respect we cannot ignore the vegetarian food habits of a vast majority of the Indian population and this apart, the religious sentiments and the depth of veneration for the cow and its progeny prevailing amongst even the non-vegetarian Hindus makes the beef detestable to at least the Hindu, Buddhist and Jain communities which together, according to the 1951 census of India, form 85.5% of India's population. The poor standard of the canning and other preservation industries in India does not hold out any hope for the export of beef in a preserved condition, which otherwise is a highly perishable article. India's cattle population has, according to the 1951 census, increased to 185 million and "the proportion of birth of he to she calves is equal" in India. In view of this, the vast bullock population cannot be just neglected without any remunerative occupation nor can be slaughtered with any economy.

The Elephant in the Farming Practices:— Since the last three years attempts are being made to harness the energy and might of the elephant in the hard tasks connected with farming operations and much hope is being entertained about its utility in this field. The chief features in this connection are as follow:—(a) The normal longevity of the elephant is 45 to 60 years. (b) It is useful as the worker economically upto 30 to 40 years as against the maximum period of 5 years in the case of a tractor for similar purposes. (c) For ploughing purposes it can be used for 8 months in a year and 20 days in a month, a day consisting of 8 hours of working (d) It can plough 10 acres a day. (e) Besides this farm operation the elephant can be used for transport and as a beast of burden (f) Annually upto 200 wild elephants can be tamed and trained for farm work. (g) The case of the elephant is free from the worries of wear and tear so much common with the tractor. (h) Its initial cost is Rs. 4000/- to 6000/- (i) Its maintenance cost is nearly Rs. 2400/- per year. (j) On daily basis work by the tractor costs Rs. 40/- per day and that by the elephant including the pay of the mahut (driver) comes to Rs. 50/-, while on a long term basis the elephant is cheaper.

However, it will be unwise to frame a policy in adopting the elephant for a large scale farm work without considering certain points which are as follow :— (a) The use of the elephant as a worker on the farm is still in an experimental stage and the experiments in different regions have yielded conflicting results. (b) The minimum area needed for the

economical working by the elephant is 100 acres of which 1% 2% will have to be utilised for growing the fodder and feeds for it, which in the case of one elephant comes to 10 maunds of sugarcane, 8 lbs. of grain flour and ½ lb. of ghee per day. Both these conditions are not possible either singly or jointly due to economic and climatic conditions (c) The peculiar gait of the elephant has yet left unsolved the problem of evolving a suitable implement which can be worked in straight lines. (d) The hitching of the animal to an implement calls for certain special accessories such as particular types of leather yokes etc. (e) If the above mentioned facts regarding the economic period of the life priod of the animal as the worker are reliable, the problem of maintaining the animal during its idle life of at least 10-15 years in its young and old age together is hard to solve. (f) Use of the animal only for ploughing purposes and making alternative arrangements for other farm operations cannot be economically sound. (g) Its initial as well as maintenance costs cannot be said, on the whole, to be any better than those in the case of the tractor in the prevailing conditions in India. (h) The successful acclimatisation of the animal in the widely diverse climatic and soil conditions in India is yet to be tested and proved. (i) The general ignorance about its growth habits, diseases and their prevention and cure is a great handicap in its large scale and regular use (j) Above all, the elephant is a dying race. To perpetuate it, special breeding programmes on a large scale involving a lot of tax on national exchequer, will have to be conducted for a long time with the success of these efforts still remaining very doubtful.

Thus, at present, on the whole, utilizing the elephant for farm work on a large scale even on large agricultural estates does not seem to be sensible. At the most the animal may be utilised for breaking open large fallow jungle areas with deep ploughing for the purpose in the regions around the natural habitat of the animal in conjunction with the other types of heavy work for which it is being utilised since a considerable period.

Conclusions :—All inventions and discoveries as also their utilization must be based on the general welfare of not only individuals but of the society in general and the nation as a whole. It is only in that case that the inventions etc. can claim any justification and meaning. This applies in the case of machinery and its utility in general. Machinery as such is not objectionable, but the way it is sought to be used in, following the exploitation of certain sections of human beings and resulting in the ultimate loss to the larger interests of the country and humanity is what is to be guarded against. Whichever material for construction have to be used as an instrument may be called a machine. And so long as its operations are guided to philanthropic ends and its use aimed at reducing the general tedium and expediting useful work without at the same time affecting adversely in any way the normal activities of the society, its use is laudable and is a blessing.

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